

18. Elaborately discuss the internal circuit and applications of IC 555 Timer.
 19. Elaborately explain the DAC in weighted resistor method.
 20. Explain the working program of multiplexer and demultiplexer.
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APRIL/MAY 2024

**23PPH13 — LINEAR AND DIGITAL ICs
AND APPLICATIONS**

Time : Three hours

Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Define Op-Amp.
2. What is the difference between an inverting and a non-inverting amplifier?
3. How can an Op-Amp be used to solve simultaneous equations?
4. What is a Sample and Hold circuit in the context of Op -Amps?
5. What is a band pass filter?
6. Define the Phase Locked Loop (PLL)?
7. What is a voltage regulator and why is it important in electronic circuits?
8. Explain the concept of a parallel comparator type ADC.



9. Explain the role of a decoder (IC 74138, IC74154) in combinational circuits.
10. How does a universal shift register (IC 74194) function?

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions.

11. (a) Explain the characteristics and parameters of an ideal Op-Amp and its internal circuit.

Or

- (b) Discuss the use of Op-Amps in differentiator and integrator circuits.

12. (a) Write short notes on Instrumentation amplifiers.

Or

- (b) Explain how an Op-Amp functions as a multiplier and divider, and discuss its applications.

13. (a) Elucidate the characteristics of voltage-controlled oscillator?

Or

- (b) Explain the working and applications of low pass filter.

14. (a) Discuss in detail the principles and applications of voltage regulators.

Or

- (b) Discuss the concept of an inverted R-2R DAC and its applications.

15. (a) Elaborately explain the operation and applications of a Four-bit parallel adder (IC 7483).

Or

- (b) Explain the operation and applications of flip flops (IC 7474).

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Explain the detail about working of inverting and non-inverting amplifiers and their applications in addition and subtraction.
17. Explain in detail about Schmitt trigger with its advantages and disadvantages.

